

# Database of Steel and Alloy (Marochnik)

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## Characteristics for grade MNZH5-1 ( MHK5-1 ).

|                    |                         |
|--------------------|-------------------------|
| Grade :            | MNZH5-1 ( MHK5-1 )      |
| Classification :   | Copper-nickel alloys    |
| Equivalent grades: | <a href="#">Go here</a> |

## Chemical composition in % for grade MNZH5-1 ( MHK5-1 )

| Ni+Co   | Fe      | C        | Si       | Mn        | S        | P        | Cu          | As       | Pb        | Zn      | Sb        | Bi        | Sn      | Impurity |
|---------|---------|----------|----------|-----------|----------|----------|-------------|----------|-----------|---------|-----------|-----------|---------|----------|
| 5 - 6.5 | 1 - 1.4 | max 0.03 | max 0.15 | 0.3 - 0.8 | max 0.01 | max 0.04 | 90.6 - 93.7 | max 0.01 | max 0.005 | max 0.5 | max 0.005 | max 0.002 | max 0.1 | all 0.7  |

Comment: **Cu** is a basis; the percentage of **Cu** is given approximately.

## Mechanical properties under T=20°C for grade MNZH5-1 ( MHK5-1 )

| Assortment          | Dimension | Direct. | $\sigma_B$ | $\sigma_T$ | $\delta_5$ | $\psi$ | KCU                 | Heat treatment |
|---------------------|-----------|---------|------------|------------|------------|--------|---------------------|----------------|
| -                   | mm        | -       | MPa        | MPa        | %          | %      | kJ / m <sup>2</sup> | -              |
| Pipe, GOST 17217-79 |           |         | 260        |            | 30         |        |                     |                |
| Pipe, GOST 17217-79 |           |         | 230        |            | 25         |        |                     |                |

## Technological properties of the material MNZH5-1 ( MHK5-1 ).

|                         |               |
|-------------------------|---------------|
| Melting temperature :   | 1120 °C       |
| Forging temperature :   | 900 - 1000 °C |
| Annealing temperature : | 600 - 650 °C  |

## Physical properties for grade MNZH5-1 ( MHK5-1 )

| T     | E 10 <sup>-5</sup> | $\alpha$ 10 <sup>6</sup> | $\lambda$      | $\rho$            | C            | R 10 <sup>9</sup> |
|-------|--------------------|--------------------------|----------------|-------------------|--------------|-------------------|
| Grade | MPa                | 1/Grade                  | Watt/(m·Grade) | kg/m <sup>3</sup> | J/(kg·Grade) | Ohm·m             |
| 20    |                    |                          | 130            | 8700              |              | 70                |
| 100   |                    | 16.4                     |                |                   |              |                   |

## Equivalent steels for grade MNZH5-1 ( MHK5-1 )

Warning! Indicated both exact and nearest equivalents.

|        |
|--------|
| USA    |
| -      |
| C70400 |

**Specification :**  
**Mechanical properties :**

|            |                                             |
|------------|---------------------------------------------|
| $\sigma_B$ | - Tensile strength , [MPa]                  |
| $\sigma_T$ | - Yield stress , [MPa]                      |
| $\delta_5$ | - Specific elongation at fracture , [ % ]   |
| $\psi$     | - Reduction of area , [ % ]                 |
| <b>KCU</b> | - Impact strength , [ kJ / m <sup>2</sup> ] |
| <b>HB</b>  | - Brinell hardness , [MPa]                  |

**Physical properties :**

|           |                                                                 |
|-----------|-----------------------------------------------------------------|
| <b>T</b>  | - Test temperature , [Grade]                                    |
| <b>E</b>  | - Young modulus , [MPa]                                         |
| $\alpha$  | - Coefficient of linear expansion ( range 20° - T ) , [1/Grade] |
| $\lambda$ | - Thermal (heat) condition coefficient , [Watt/(m·Grade)]       |
| $\rho$    | - Density , [kg/m <sup>3</sup> ]                                |
| <b>C</b>  | - Specific heat ( range 20° - T ) , [J/(kg·Grade)]              |
| <b>R</b>  | - Electrical resistance , [Ohm·m]                               |

Database of steels and alloys (Marochnik) contains information about chemical composition and properties more then 2500 steels and alloys (stainless steel, alloy steel, carbone steel, structural steel, tool steel, cast iron, aluminum alloy, titanium alloy, copper alloy, nickel alloy, magnesium alloy and others).  
 Helpfull for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

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